

**ABSTRACT OF THE DISCLOSURE**

A technique for selectively processing data from a digital detector includes determining an asymmetrical image area produced by orientation of a radiation source assembly. The assembly may include a radiation source and a collimator, which may be separately orientable. The image area is computed based upon the orientation of the radiation source assembly that projects a radiation beam towards an imaging plane. Image data from a detector within the imaging plane is selectively processed to improve computational efficiency. The system may also determine whether the image area falls within the imaging surface of the detector and inform an operator or inhibit an exposure if such is not the case.